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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/735,053 | 12/12/2003 | Gopal Pingali | YOR920030551US1 | 2500 |
| 29683 | 7590 | 12/29/2005 | EXAMINER | |
| HARRINGTON & SMITH, LLP 4 RESEARCH DRIVE SHELTON, CT 06484-6212 | | | SEVER, ANDREW T | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2851 | |

DATE MAILED: 12/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/735,053 | PINGALI ET AL. | |
| | Examiner | Art Unit | |
| | Andrew T. Sever | 2851 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 and 15-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 and 15-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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3. Claims 1-3, 5, 6, 15-32, and 34-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyamoto et al. (US 5,114,224) in view of Raskar (US 6,793,350) and Connelly et al. (US 2003/0202156.)

Miyamoto teaches in figure 1 a positioning system comprising,

At least one mount (10) for mounting a projection unit, the unit comprised of at least a projector (11) for projecting a distorted image (since it is designed for projecting on a curved surface it must project at least a slightly distorted image since a non-distorted flat image would not appear correct on a curved surface (see column 1 line 60 through column 2 line 9 of Raskar et al. (US 6,793,350) which teaches that even for large curved displays (such as that taught by Miyamoto) that a pre-distorted image is necessary to allow a viewer to view an undistorted image and the rest of Raskar teaches a preferred method of achieving an undistorted image in various environments such as that taught by Miyamoto and accordingly it would have been obvious to one of ordinary skill in the art at the time the invention was made to use such a method in the projection/positioning system of Miyamoto so that an undistorted image is viewable by a viewer at an position); wherein the at least one mount is coupled to a mechanism for providing rotational movement for adjusting one of a position and an orientation of the projection unit to produce from the distorted image a substantially undistorted image on a surface (as stated above with regards to Raskar it is obvious that a undistorted image would be produced, in general people do not purposely make highly distorted images when advertising which is what Miyamoto is designed for.)

Miyamoto does not teach the mount is coupled to a mechanism for providing translational movement for adjusting the position of the projection unit. Connelly teaches in figure 1a, a mechanism for providing translational movement for adjusting the position of a projection unit mounted on it. Connelley teaches in paragraphs 9 and 10 that such a translational movement system allows for the use of multiple projectors in the same location and also more versatility in positioning the projector allowing for less keystone distortion. Further one of ordinary skill in the art would recognize that it would be useful to translationally move the projector of Miyamoto as tracking an object such as a balloon can be more efficiently done if the projector can follow it. Accordingly it would have been obvious to one of ordinary skill in the art at the time the invention was made to mount the mounting unit of Miyamoto such that it can have translational movement as taught by Connelley.

With regards to applicant's claims 2 and 3:

See the embodiment of Miyamoto in figure 11 where a redirection device (30) is used, wherein said device is a mirror as claimed in applicant's claim 3.

With regards to applicant's claim 5:

The projector is coupled to a controller (100).

With regards to applicant's claim 6:

The controller is remote (i.e. not mounted on the projection unit).

With regards to applicant's claim 15:

Connelly teaches using a rail system (parts 106 are rails).

With regards to applicant's claim 16:

The rails of Connelly are fixed to a surface.

With regards to applicant's claim 17:

See part 4 of Miyamoto.

With regards to applicant's claim 18:

As described in column 4 of Miyamoto, geometric information is used in determining the projection position. (Cartesian coordinates are a type of geometric information.)

With regards to applicant's claim 19:

The system of Miyamoto includes part 12 which serves as tracking and sensing equipment for identifying a position of the at least one projector.

With regards to applicant's claim 20 and 22:

The mount of Miyamoto can position the projector with two degrees of freedom.

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With regards to applicant's claim 21 and 23:

Miyamoto in view of Connelly allows for 3 degrees of freedom.

With regards to applicant's claim 24-28, and 32:

See above where the method of using the projector to make an undistorted image upon a surface is obvious in light of the projector that does so.

With regards to applicant's claim 29:

Connelly teaches the system can be used with two projectors or more (as does Raskar).

With regards to applicant's claim 30 and 31:

Miyamoto and/or Connelly do not teach the use of more than one projector wherein the projection unit produces a first portion of the distorted image and the at least another projection unit produces another portion of the distorted image. Raskar teaches in figure 1 a method for projecting an undistorted image upon a curved image with more than one projector, which includes projecting a structure light pattern (calibration image as is claimed in applicant's claim 31). As shown in figure 4 of Raskar multiple projectors can be used in projecting on large curved surfaces and a first projection unit produces a first portion of the distorted image and a second projection unit produces another portion of the distorted image. Raskar teaches that prior art methods of projecting on large curved or irregular shaped surfaces with stationary projectors required several hours each day to align (see column 1 lines 60-65), this is clearly not an option with the projection system

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of Miyamoto in view of Connelly as the projected surface moves. Raskar teaches that Raskar's method allows for projecting on curved display surface with easy calibration (See column 2 lines 55-63.) Accordingly it would have been obvious to one of ordinary skill in the art at the time the invention was made to use Raskar's method of projecting with multiple projectors/cameras on large curved surfaces in the method of projecting taught by Miyamoto alone or in view of Connelly.

With regards to applicant's claim 34:

Part 4 is basically a computer that executes a computer program for positioning a projection unit to provide a substantially undistorted image upon a surface (see above for the method of doing so).

With regards to applicant's claims 35-40:

See above.

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyamoto et al. in view of Raskar et al. and Connelly et al. as applied to claims 1-3, 5, 6, 15-32, and 34-40 above, and further in view of Machtig (US 5,278,596.)

As described in more detail above, Miyamoto in view of Raskar and Connelly teaches a positioning system for a projector, which among other things includes a redirection device, however Miyamoto in view of Raskar and Connelly does not teach the use of optical fiber, and lenses for redirecting projected light. Machtig teaches in column 1 line

64 through column 2 line 18, that such a system allows for the light source to be kept separate from the heat sensitive components and it also allows for mechanism allowing the projector to be moveable without sacrificing brightness of the projected image.

Accordingly since it would be desirable to use as bright of a projector as possible to project on the distant moving screens of Miyamoto; it would have been obvious to one of ordinary skill in the art at the time the invention was made to include optical fiber to channel light from a stationary light source to the redirection device.

5. Claims 7-13 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyamoto et al. in view of Raskar et al. and Connelly et al. as applied to claims 1-3, 5, 6, 15-32 and 34-40 above, and further in view of Pinhanez (US 6,431,711.)

As described in more detail above, Miyamoto in view of Raskar and Connelly, teaches a positioning system which among other things comprises a projector and a mechanism for providing both translational movement and rotational movement. Miyamoto in view of Connelly do not teach that the system is used for user interaction. Pinhanez teaches a similar system to that of Miyamoto in view of Raskar and Connelly in figures 8 and 9. Pinhanez's system further includes an interactivity portion allowing interaction between people and a projector (see column 2 lines 15-25.) Pinhanez teaches in column 1 lines 54 through column 2 line 2, that having an interactive region for a user interaction has the advantage of allowing a user to change slides or other video medium without having to break the flow of the presentation. Accordingly it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the projection system

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of Miyamoto in view of Raskar and Connelly interactive as taught by Pinhanez since such a system allows a user (or plurality thereof) to take even greater advantage of the moving projection screen of Miyamoto (for instance a user could bring the screen to them and control part of the presentation and then it could be moved to another user to do likewise without having to deal with moving the computer or remote control around which can cause some difficulties.)

With regards to applicant's claim 8:

Pinhanez teaches a variety of uses for such a system at column 15 lines 60-61 including bringing up diagrams and one of ordinary skill in the art would also expect it to include such things as starting playing of a video on a remote video player as this is the advantage of Pinhanez that things operated either by moving the controller around or a remote control can be controlled just by interaction.

With regards to applicant's claims 9-11:

The mounts of Miyamoto in view of Raskar and Connelly in view of Pinhanez would be used to hold the interaction recognition system.

With regards to applicant's claim 12:

Both Pinhanez and Miyamoto teach cameras.

With regards to applicant's claim 13:

Pinhanez teaches using voice in column 12 lines 39-45.

With regards to applicant's claim 33:

The method of using the projection system of Miyamoto in view of Raskar and Connelly and Pinhanez is obvious.

Response to Arguments

6. Applicant's arguments filed 10/14/2005 have been fully considered but they are not persuasive.

Applicant's main argument is that neither Miyamoto et al. or Connelly et al. teach projecting a distorted image to produce a substantially undistorted image. In the non-final rejection of 7/14/2005 as stated in applicant's arguments the issue of projecting a distorted image was addressed through official notice with the Raskar reference serving of evidence of that official notice, however since applicant challenges this official notice, the Raskar reference has been further explained and added to the rejection (see *Zurko* 59 USPQ2d at 1697). Since this has only been added to support an assertion of well known obviousness the rejection is made final (see MPEP 2144.03 D) also the rejection of claims 30 and 31 which were originally part of a rejection based on Miyamoto in view of Connelly and Raskar were combined with the other rejections based on the same. With regards to other arguments not based on the assertion that Miyamoto in view of Connelly

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and now Raskar does not teach projecting a distorted image to produce an undistorted image on a surface, applicant's arguments that Raskar does not teach a multiple projection system are incorrect see column 2 lines 55-62 which teaches the methods of Raskar are applicable to both single projection systems such as Miyamoto or to multiple projection systems such as Connelly. All other arguments are based on the first argument, which has been found to be unpersuasive, and accordingly all rejections are made final.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew T. Sever whose telephone number is 571-272-2128. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on 571-272-2258. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



AS

William Perkey
Primary Examiner